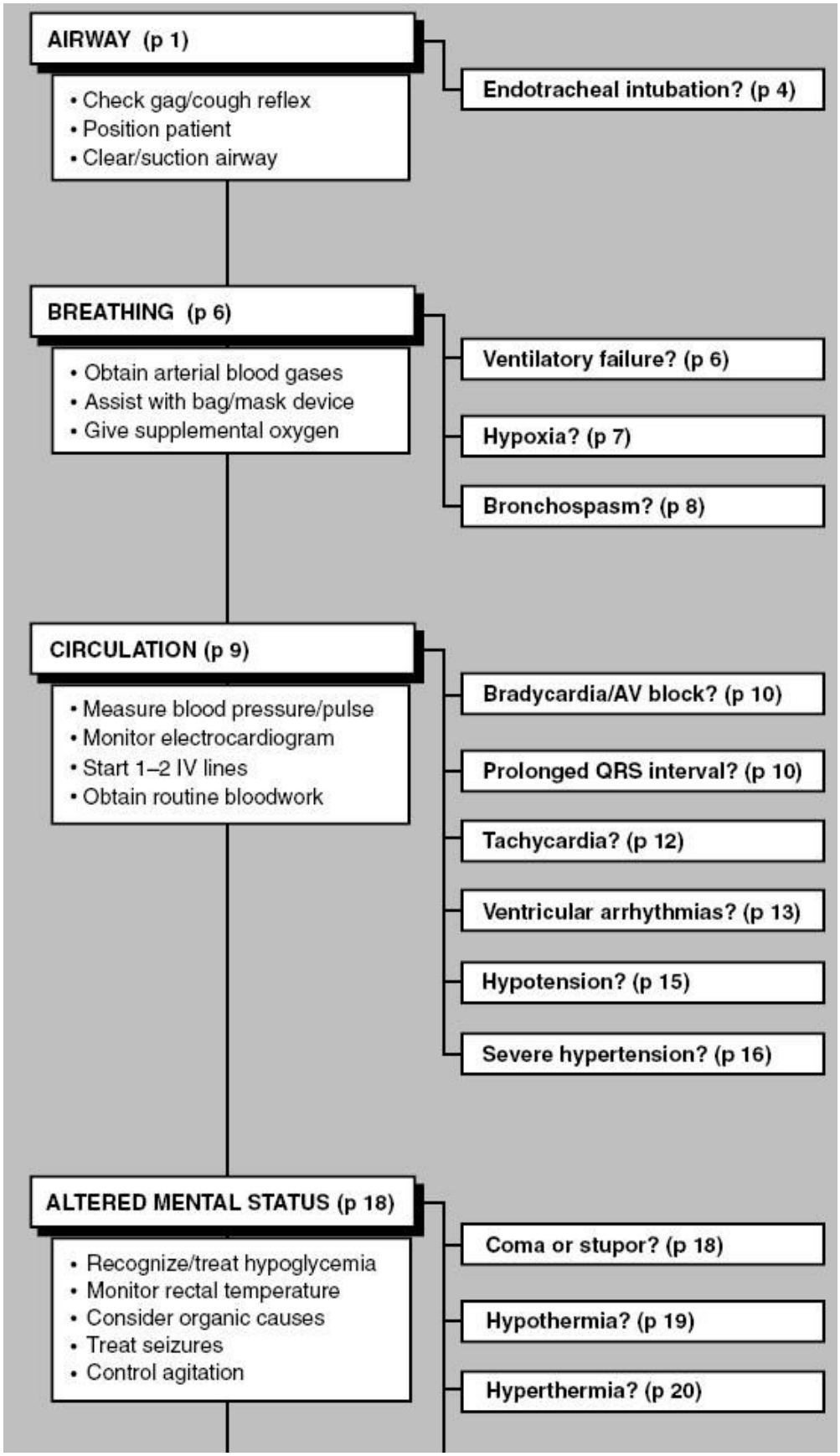

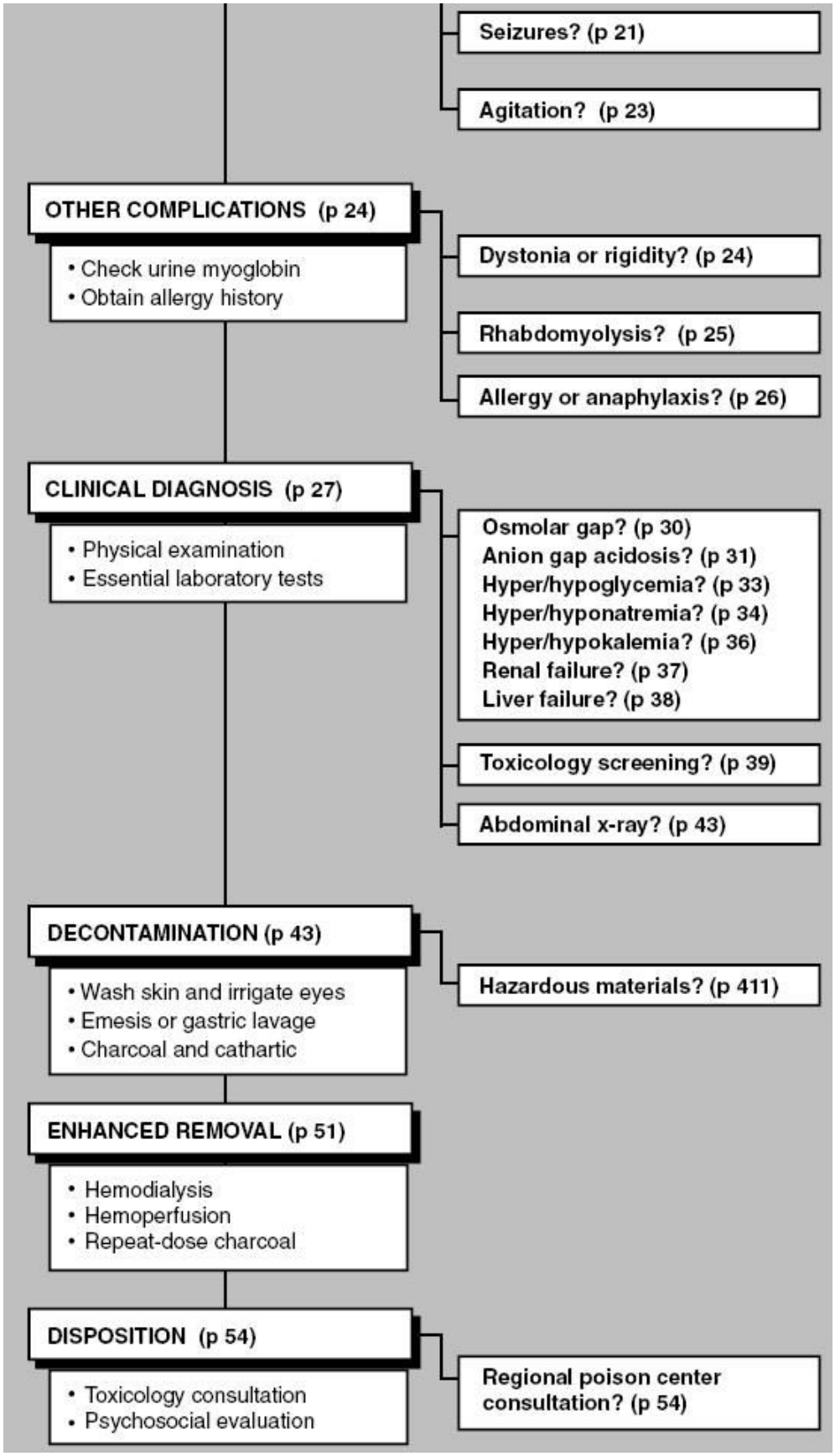

TABLE I–1. SELECTED DRUGS AND TOXINS CAUSING VENTILATORY FAILURE[a]

Paralysis of ventilatory muscles	Depression of central respiratory drive
Botulin toxin	Barbiturates
Neuromuscular blockers	Clonidine and other sympatholytic agents
Organophosphates and carbamates	Ethanol and alcohols
Snakebite	Opiates
Strychnine	Sedative-hypnotics
Tetanus	Tricyclic antidepressants

TABLE I–2. SELECTED CAUSES OF HYPOXIA[a]

Inert gases	**Pneumonia or noncardiogenic pulmonary edema**
Carbon dioxide	Aspiration of gastric contents
Methane and propane	Aspiration of hydrocarbons
Nitrogen	Chlorine and other irritant gases
Cardiogenic pulmonary edema	Cocaine
Beta blockers	Ethchlorvynol (IV and oral)
Quinidine, procainamide, and disopyramide	Ethylene glycol
	Mercury vapor
Tricyclic antidepressants	Metal fumes ("metal fumes fever")
Verapamil	Nitrogen dioxide
Cellular hypoxia	Opiates
Carbon monoxide	Paraquat
Cyanide	Phosgene
Hydrogen sulfide	Salicylates
Methemoglobinemia	Sedative-hypnotic drugs
Sulfhemoglobinemia	Smoke inhalation

TABLE I–3. SELECTED DRUGS AND TOXINS CAUSING BRONCHOSPASM

Beta blockers	Organophosphates and other anticholinesterases
Chlorine and other irritant gases	Smoke inhalation
Hydrocarbon aspiration	Sulfites (eg, in foods)
Isocyanates	

TABLE I–4. SELECTED DRUGS AND TOXINS CAUSING BRADYCARDIA OR ATRIOVENTRICULAR BLOCK[a]

- **Cholinergic or vagotonic agents**
  - Carbamate insecticides
  - Digitalis glycosides
  - Organophosphates
  - Physostigmine
- **Membrane-depressant drugs**
  - Beta blockers
  - Encainide and flecainide
  - Quinidine, procainamide, and disopyramide
  - Tricyclic antidepressants
- **Symphatholytic agents**
  - Beta blockers
  - Clonidine
  - Opiates
- **Other**
  - Calcium antagonists
  - Lithium
  - Phenylpropanolamine and other alpha-adrenergic agonists
  - Propoxyphene

TABLE I–5. SELECTED DRUGS AND TOXINS CAUSING QRS INTERVAL PROLONGATION[a]

- Beta blockers (propranolol)
- Chloroquine and related agents
- Digitalis glycosides (complete heart block)
- Diphenhydramine
- Encainide and flecainide
- Hyperkalemia
- Phenothiazines (thioridazine)
- Propoxyphene
- Quinidine, procainamide, and disopyramide
- Tricyclic antidepressants

TABLE I–6. SELECTED DRUGS AND TOXINS CAUSING TACHYCARDIA[a]

- **Sympathomimetic agents**
  - Amphetamines and derivatives
  - Caffeine
  - Cocaine
  - Ephedrine and pseudoephedrine
  - Phencyclidine (PCP)
  - Theophylline
- **Agents causing cellular hypoxia**
  - Carbon monoxide
  - Cyanide
  - Hydrogen sulfide
  - Oxidizing agents (methemoglobinemia)
- **Anticholinergic agents**
  - *Amanita muscaria* mushrooms
  - Antihistamines
  - Atropine and other anticholinergics
  - Phenothiazines
  - Plants (many)
  - Tricyclic antidepressants
- **Other**
  - Ethanol or sedative-hypnotic drug withdrawal
  - Hydralazine and other vasodilators
  - Thyroid hormone

TABLE I–7. SELECTED DRUGS AND TOXINS CAUSING VENTRICULAR ARRHYTHMIAS[a]

Ventricular tachycardia or fibrillation
- Amphetamines and other sympathomimetic agents
- Aromatic hydrocarbon solvents
- Caffeine
- Chloral hydrate
- Chlorinated or fluorinated hydrocarbon solvents
- Cocaine
- Digitalis glycosides
- Fluoride
- Phenothiazines
- Theophylline
- Tricyclic antidepressants

QT prolongation or torsades de pointes[b]
- Amiodarone
- Arsenic
- Astemizole and terfenadine
- Chloroquine, quinine, and related agents
- Citrate
- Fluoride
- Organophosphate insecticides
- Quinidine, procainamide, and disopyramide
- Thallium
- Thioridazine
- Tricyclic antidepressants

TABLE I–11. SELECTED DRUGS AND TOXINS ASSOCIATED WITH HYPOTHERMIA[a]

- Barbiturates
- Ethanol and other alcohols
- Hypoglycemic agents
- Opiates
- Phenothiazines
- Sedative-hypnotic agents
- Tricyclic antidepressants
- Vasodilators

TABLE I–9. SELECTED DRUGS AND TOXINS CAUSING HYPERTENSION[a]

HYPERTENSION WITH TACHYCARDIA

Generalized sympathomimetic agents
- Amphetamines and derivatives
- Cocaine
- Ephedrine and pseudoephedrine
- Epinephrine
- Levodopa
- LSD (lysergic acid diethylamide)
- Marihuana
- Monoamine oxidase inhibitors

Anticholinergic agents[b]
- Antihistamines
- Atropine and other anticholinergics
- Tricyclic antidepressants

Other
- Ethanol and sedative-hypnotic drug withdrawal
- Nicotine (early stage)
- Organophosphates (early stage)

HYPERTENSION WITH BRADYCARDIA OR ATRIOVENTRICULAR BLOCK
- Clonidine, tetrahydrozoline, and oxymetazoline[c]
- Ergot derivatives
- Methoxamine
- Norepinephrine
- Phenylephrine
- Phenylpropanolamine

TABLE I–8. SELECTED DRUGS AND TOXINS CAUSING HYPOTENSION[a]

HYPOTENSION WITH RELATIVE BRADYCARDIA

Sympatholytic agents
- Beta blockers
- Bretylium
- Clonidine and methyldopa
- Hypothermia
- Opiates
- Reserpine
- Tetrahydrozoline and oxymetazoline

Membrane-depressant drugs
- Beta blockers (mainly propranolol)
- Encainide and flecainide
- Quinidine, procainamide, and disopyramide
- Propoxyphene
- Tricyclic antidepressants

Others
- Barbiturates
- Calcium antagonists
- Fluoride
- Organophosphates and carbamates
- Sedative-hypnotic agents

HYPOTENSION WITH TACHYCARDIA

Fluid loss or third spacing
- Amatoxin-containing mushrooms
- Arsenic
- Colchicine
- Copper sulfate
- Hyperthermia
- Iron
- Rattlesnake envenomation
- Sedative-hypnotic agents

Peripheral venous or arteriolar dilation
- β_2-stimulants (eg, metaproterenol, terbutaline)
- Caffeine
- Hydralazine
- Hyperthermia
- Nitrites
- Prazosin
- Sodium nitroprusside
- Phenothiazines
- Theophylline
- Tricyclic antidepressants

TABLE I–10. SELECTED DRUGS AND TOXINS CAUSING COMA OR STUPOR[a]

General CNS depressants
- Anticholinergics
- Antihistamines
- Barbiturates
- Benzodiazepines
- Carbamazepine
- Ethanol and other alcohols
- GHB (gamma hydroxybutyrate)
- Phenothiazines
- Sedative-hypnotic agents
- Tricyclic antidepressants
- Valproic acid

Sympatholytic agents
- Clonidine, tetrahydrozoline, and oxymetazoline
- Methyldopa
- Opiates

Cellular hypoxia
- Carbon monoxide
- Cyanide
- Hydrogen sulfide
- Methemoglobinemia
- Sodium azide

Other or unknown mechanisms
- Bromide
- Diquat
- Disulfiram
- Hypoglycemic agents
- Lithium
- Phencyclidine
- Phenylbutazone and enolic acid derivatives
- Salicylates

TABLE I–12. SELECTED DRUGS AND TOXINS ASSOCIATED WITH HYPERTHERMIA[a]

Excessive muscular hyperactivity, rigidity, or seizures
- Amoxapine
- Amphetamines and derivatives
- Cocaine
- Lithium
- LSD (lysergic acid diethylamide)
- Maprotiline
- Monoamine oxidase inhibitors
- Phencyclidine
- Tricyclic antidepressants

Increased metabolic rate
- Dinitrophenol and pentachlorophenol
- Salicylates
- Thyroid hormone

Impaired heat dissipation or disrupted thermoregulation
- Amoxapine
- Anticholinergic agents
- Antihistamines
- Phenothiazines and other antipsychotic agents
- Tricyclic antidepressants

Other
- Exertional heatstroke
- Malignant hyperthermia
- Metal fume fever
- Neuroleptic malignant syndrome (NMS)
- Serotonin syndrome
- Withdrawal from ethanol or sedative-hypnotic drugs

TABLE I–22. CAUSES OF ELEVATED OSMOLAR GAP[a]

- Acetone
- Dimethyl sulfoxide (DMSO)
- Ethanol
- Ethyl Ether
- Ethylene glycol and other low-molecular-weight glycols
- Isopropyl alcohol
- Magnesium
- Mannitol
- Metaldehyde
- Methanol
- Osmotic contrast dyes
- Propylene glycol
- Renal failure without dialysis
- Severe alcoholic ketoacidosis, diabetic ketoacidosis, or lactic acidosis

[a]Osmolar gap = measured – calculated osmolality. Normal = 0 ± 5.

$$\text{Calculated osmolality} = 2[\text{Na}] + \frac{[\text{glucose}]}{18} + \frac{[\text{BUN}]}{2.8} = 290 \text{ mOsm/l}$$

Na (serum sodium) in meq/L; glucose and BUN (urea nitrogen) in mg/dL.

Note: The osmolality may be measured as falsely normal if a vaporization point osmometer is used instead of the freezing point device, because volatile alcohols will be boiled off.

TABLE I–21. SOME COMMON ODORS CAUSED BY TOXINS AND DRUGS[a]

Odor	Drug or Toxin
Acetone	Acetone, isopropyl alcohol
Acrid or pearlike	Chloral hydrate, paraldehyde
Bitter almonds	Cyanide
Carrots	Cicutoxin (water hemlock)
Garlic	Arsenic, organophosphates, selenium, thallium
Mothballs	Naphthalene, paradichlorobenzene
Pungent aromatic	Ethchlorvynol
Rotten eggs	Hydrogen sulfide, stibine, mercaptans, old sulfa drugs
Wintergreen	Methyl salicylate

[a]Adapted, in part, with permission, from Olson KR et al. *Med Toxicol* 1987;2:67.

TABLE I–24. SELECTED DRUGS AND TOXINS CAUSING ELEVATED ANION GAP ACIDOSIS[a,b]

Lactic acidosis
- Acetaminophen (levels >600 mg/L)
- Beta-adrenergic drugs
- Caffeine
- Carbon monoxide
- Cyanide
- Hydrogen sulfide
- Iron
- Isoniazid (INH)
- Phenformin (common) and metformin (rare)
- Salicylates
- Seizures, shock, or hypoxia
- Sodium azide
- Theophylline

Other
- Alcoholic ketoacidosis
- Benzyl alcohol
- Diabetic ketoacidosis
- Ethylene glycol
- Exogenous organic and mineral acids
- Formaldehyde
- Ibuprofen (propionic acid)
- Metaldehyde
- Methanol
- Salicylates (salicylic acid)
- Valproic acid

[a]Anion gap = [Na] – [Cl] – [HCO_3] = 8 –12 meq/L.
[b]Adapted, in part, with permission, from Olson KR et al. *Med Toxicol* 1987;2:73.

TABLE I–13. SELECTED DRUGS AND TOXINS CAUSING SEIZURES[a]

Adrenergic-sympathomimetic agents
- Amphetamines and derivatives
- Caffeine
- Cocaine
- Phencyclidine
- Phenylpropanolamine
- Theophylline

Antidepressants and antipsychotics
- Amoxapine
- Haloperidol and butyrophenones
- Loxapine, clozapine, and olanzapine
- Phenothiazines
- Tricyclic antidepressants
- Venlafaxine, other newer serotonin reuptake inhibitors (SSRI's)

Others
- Antihistamines (diphenhydramine, hydroxyzine)
- Beta blockers (primarily propranolol; not reported for atenolol, metoprolol, pindolol, or practolol)
- Boric acid
- Camphor
- Carbamazepine
- Cellular hypoxia (eg, carbon monoxide, cyanide, hydrogen sulfide)
- Chlorinated hydrocarbons
- Cholinergic agents (carbamates, nicotine, organophosphates)
- Cicutoxin and other plant toxins
- Citrate
- DEET (diethyltoluamide)
- Ethylene glycol
- Fluoride
- GHB (gamma hydroxybutyrate)
- Isoniazid (INH)
- Lead and other heavy metals
- Lidocaine and other local anesthetics
- Lithium
- Mefenamic acid
- Meperidine (normeperidine metabolite)
- Metaldehyde
- Methanol
- Methyl bromide
- Phenols
- Phenylbutazone
- Piroxicam
- Salicylates
- Strychnine (opisthotonus and rigidity)
- Withdrawal from ethanol or sedative-hypnotic drugs

TABLE I–14. SELECTED DRUGS AND TOXINS CAUSING AGITATION, DELIRIUM, OR CONFUSION[a]

Predominant confusion or delirium
- Amantadine
- Anticholinergic agents
- Antihistamines
- Bromide
- Carbon monoxide
- Cimetidine and other H-2 blockers
- Disulfiram
- Lead and other heavy metals
- Levodopa
- Lidocaine and other local anesthetics
- Lithium
- Salicylates
- Withdrawal from ethanol or sedative-hypnotic drugs

Predominant agitation or psychosis
- Amphetamines and derivatives
- Caffeine
- Cocaine
- Cycloserine
- LSD (lysergic acid diethylamide)
- Marihuana
- Mercury
- Phencyclidine (PCP)
- Phenylpropanolamine
- Procaine
- Serotonin reuptake inhibitors (SSRIs)
- Steroids (eg, prednisone)
- Theophylline

TABLE I–15. SELECTED DRUGS AND TOXINS CAUSING DYSTONIAS, DYSKINESIAS, AND RIGIDITY[a]

Dystonia	Dyskinesias
Haloperidol and butyrophenones	Amphetamines
Metoclopramide	Anticholinergic agents
Phenothiazines (prochlorperazine)	Antihistamines
Rigidity	Caffeine
Black widow spider bite	Carbamazepine
Lithium	Carisoprodol
Malignant hyperthermia	Cocaine
Methaqualone	GHB (gamma hydroxybutyrate)
Monoamine oxidase inhibitors	Ketamine
Neuroleptic malignant syndrome	Levodopa
Phencyclidine (PCP)	Lithium
Strychnine	Phencyclidine (PCP)
	Serotonin reuptake inhibitors (SSRIs)
	Tricyclic antidepressants

TABLE I–25. SELECTED CAUSES OF ALTERATIONS IN SERUM GLUCOSE

Hyperglycemia	Hypoglycemia
β_2-adrenergic drugs	Akee fruit
Caffeine intoxication	Endocrine disorders (hypopituitarism, Addison's disease, myxedema)
Corticosteroids	Ethanol intoxication (especially pediatric)
Dextrose administration	Fasting
Diabetes mellitus	Hepatic failure
Diazoxide	Insulin
Excessive circulating epinephrine	Oral sulfonylurea hypoglycemic agents
Glucagon	Propranolol intoxication
Theophylline intoxication	Renal failure
Thiazide diuretics	Salicylate intoxication
Vacor	Valproic acid intoxication

TABLE I–16. SELECTED DRUGS AND TOXINS ASSOCIATED WITH RHABDOMYOLYSIS

Excessive muscular hyperactivity, rigidity, or seizures
- Amphetamines and derivatives
- Clozapine and olanzapine
- Cocaine
- Lithium
- Monoamine oxidase inhibitors
- Phencyclidine (PCP)
- Seizures caused by a variety of agents
- Strychnine
- Tetanus
- Tricyclic antidepressants

Direct cellular toxicity
- Amatoxin-containing mushrooms
- Carbon monoxide
- Colchicine
- Ethylene glycol

Other or unknown mechanisms
- Barbiturates (prolonged immobility)
- Chlorophenoxy herbicides
- Clofibrate
- Ethanol
- Hemlock
- Hyperthermia caused by a variety of agents
- Sedative-hypnotic agents (prolonged immobility)
- Trauma

TABLE I–17. EXAMPLES OF DRUGS AND TOXINS CAUSING ANAPHYLACTIC OR ANAPHYLACTOID REACTIONS

Anaphylactic reactions (IgE-mediated)
- Antisera (antivenins)
- Foods (nuts, fish, shellfish)
- Hymenoptera and other insect stings
- Immunotherapy allergen extracts
- Penicillins and other antibiotics
- Vaccines

Other or unclassified
- Exercise
- Sulfites
- Tartrazine dye

Anaphylactoid reactions (not IgE-mediated)
- Acetylcysteine
- Blood products
- Iodinated contrast media
- Opiates
- Scombroid
- Tubocurarine

TABLE I–18. AUTONOMIC SYNDROMES[a,b]

	Blood Pressure	Pulse Rate	Pupil Size	Sweating	Peristalsis
Alpha-adrenergic	+	–	+	+	–
Beta-adrenergic	±	+	±	±	±
Mixed adrenergic	+	+	+	+	–
Sympatholytic	–	–	- -	–	–
Nicotinic	+	+	±	+	+
Muscarinic	–	- -	- -	+	+
Mixed cholinergic	±	±	- -	+	+
Anticholinergic	±	+	+	- -	- -

[a]Key to symbols: + = increased; ++ = markedly increased; – = decreased; - - = markedly decreased; ± = mixed effect, no effect, or unpredictable.
[b]Adapted, with permission, from Olson KR et al. *Med Toxicol* 1987;2:54.

TABLE I–19. SELECTED CAUSES OF PUPIL SIZE CHANGES[a]

CONSTRICTED PUPILS (MIOSIS)

Sympatholytic agents
- Clonidine
- Opiates
- Phenothiazines
- Tetrahydrozoline and oxymetazoline
- Valproic acid

Cholinergic agents
- Carbamate insecticides
- Nicotine[b]
- Organophosphates
- Physostigmine
- Pilocarpine

Others
- Heatstroke
- Pontine infarct
- Subarachnoid hemorrhage

DILATED PUPILS (MYDRIASIS)

Sympathomimetic agents
- Amphetamines and derivatives
- Cocaine
- Dopamine
- LSD (lysergic acid diethylamide)
- Monoamine oxidase inhibitors
- Nicotine[b]

Anticholinergic agents
- Antihistamines
- Atropine and other anticholinergics
- Glutethimide
- Tricyclic antidepressants

[a]Adapted, in part, with permission, from Olson KR et al. *Med Toxicol* 1987;2:66.
[b]Nicotine can cause pupils to be dilated (rare) or constricted (common).

TABLE I–20. SELECTED CAUSES OF NEUROPATHY

Cause	Comments
Acrylamide	Sensory and motor distal axonal neuropathy
Antineoplastic agents	Vincristine most strongly associated (see p 88)
Antiretroviral agents	Nucleoside reverse transcriptase inhibitors
Arsenic	Sensory predominant mixed axonal neuropathy (see p 95)
Buckthorn (*K humboltiana*)	Livestock and human demyelinating neuropathy
Carbon disulfide	Sensory and motor distal axonal neuropathy
Dimethylaminoproprionitrile	Urogenital and distal sensory neuropathy
Disulfiram	Sensory and motor distal axonal neuropathy
Ethanol	Sensory and motor distal axonal neuropathy (see p 162)
n-Hexane	Sensory and motor distal axonal neuropathy
Isoniazid (INH)	Preventable with co-administration of pyridoxine (see p 195)
Lead	Motor predominant mixed axonal neuropathy (see p 199)
Mercury	Organic mercury compounds (see p 213)
Methyl *n*-butyl ketone	Acts like *n*-hexane, via 2,5-hexanedione metabolite
Nitrofurantoin	Sensory and motor distal axonal neuropathy
Nitrous oxide	Sensory axonal neuropathy with loss of proprioception (see p 236)
Organophosphate insecticides	Specific agents only (eg, triorthocresylphosphate)
Pyridoxine (Vitamin B_6)	Sensory neuropathy with chronic excessive dosing
Thallium	Sensory and motor distal axonal neuropathy (see p 302)
Tick paralysis	Ascending flaccid paralysis after bites by several tick species

TABLE I–26. SELECTED DRUGS AND TOXINS ASSOCIATED WITH ALTERED SERUM SODIUM

Hypernatremia
- Cathartic abuse
- Lactulose therapy
- Lithium therapy
- Mannitol
- Severe gastroenteritis (many poisons)
- Sodium overdose
- Valproic acid (divalproex sodium)

Hyponatremia
- Beer potomania
- Diuretics
- Iatrogenic (IV fluid therapy)
- Psychogenic polydipsia
- Syndrome of inappropriate ADH (SIADH):
  - Amitriptyline
  - Chlorpropamide
  - Clofibrate
  - Oxytocin
  - Phenothiazines

TABLE I–27. SELECTED DRUGS AND TOXINS AND OTHER CAUSES OF ALTERED SERUM POTASSIUM[a]

Hyperkalemia	Hypokalemia
Alpha-adrenergic agents	Barium
Angiotensin converting enzyme (ACE) inhibitors	Beta-adrenergic drugs
Beta blockers	Caffeine
Digitalis glycosides	Diuretics (chronic)
Fluoride	Epinephrine
Lithium	Theophylline
Potassium	Toluene (chronic)
Renal failure	
Rhabdomyolysis	

[a]Adapted, with permission, from Olson KR et al. *Med Toxicol* 1987;2:73.

TABLE I–28. EXAMPLES OF DRUGS AND TOXINS AND OTHER CAUSES OF ACUTE RENAL FAILURE

Direct nephrotoxic effect
- Acetaminophen
- *Amanita phalloides* mushrooms
- Analgesics (eg, ibuprofen, phenacetin)
- Antibiotics (eg, aminoglycosides)
- Bromates
- Chlorates
- Chlorinated hydrocarbons
- *Cortinarius* sp. mushrooms
- Cyclosporin
- Ethylene glycol (oxalate)
- Heavy metals (eg, mercury)

Hemolysis
- Arsine
- Naphthalene
- Oxidizing agents (esp. with G6PD deficiency)

Rhabdomyolysis (see also Table I–16)
- Amphetamines and cocaine
- Coma with prolonged immobility
- Hyperthermia
- Phencyclidine (PCP)
- Status epilepticus
- Strychnine

TABLE I–29. EXAMPLES OF DRUGS AND TOXINS CAUSING HEPATIC DAMAGE

- Acetaminophen
- *Amanita phalloides* and similar mushrooms
- Arsenic
- Carbon tetrachloride and other chlorinated hydrocarbons
- Copper
- Dimethylformamide
- Ethanol
- Halothane
- Iron
- Nitrosamine
- Pennyroyal oil
- Phenol
- Phosphorus
- Polychlorinated biphenyls (PCBs)
- Pyrrolizidine alkaloids
- Thallium
- 2-Nitropropane
- Valproic acid

TABLE I–36. SOME TOPICAL AGENTS FOR CHEMICAL EXPOSURES TO THE SKIN[a]

Chemical Corrosive Agent	Topical Treatment
Hydrofluoric acid	Calcium soaks
Oxalic acid	Calcium soaks
Phenol	Mineral oil or other oil; isopropyl alcohol
Phosphorus (white)	Copper sulfate 1% (colors embedded granules blue, facilitates removal)

[a]Reference: Edelman PA; Chemical and electrical burns. Pages 183–202 in: *Management of the Burned Patient.* Achauer BM (editor). Appleton & Lange, 1987.

TABLE I–37. DRUGS AND TOXINS POORLY ADSORBED BY ACTIVATED CHARCOAL[a]

Alkali	Inorganic salts
Cyanide[b]	Iron
Ethanol and other alcohols	Lithium
Ethylene glycol	Mineral acids
Fluoride	Potassium

[a]Few studies have been performed to determine in vivo adsorption of these and other toxins to activated charcoal. Adsorption may also depend on the specific type and concentration of charcoal.
[b]Charcoal should still be given because usual doses of charcoal (60–100g) will adsorb usual lethal ingested doses of cyanide (200–300 mg).

TABLE I–38. SELECTED ORAL BINDING AGENTS

Drug or Toxin	Binding Agent(s)
Calcium	Cellulose sodium phosphate
Chlorinated hydrocarbons	Cholestyramine resin
Digitoxin[a]	Cholestyramine resin
Heavy metals (arsenic, mercury)	Demulcents (egg white, milk)
Iron	Sodium bicarbonate
Lithium	Sodium polystyrene sulfonate (Kayexalate)
Paraquat[a]	Fuller's earth, Bentonite
Potassium	Sodium polystyrene sulfonate (Kayexalate)
Thallium	Prussian blue

[a]Activated charcoal is also very effective.

TABLE I–39. VOLUME OF DISTRIBUTION (Vd) OF SOME DRUGS AND TOXINS

Large Vd (>5–10 L/kg)	Small Vd (<1 L/kg)
Antidepressants	Alcohols
Digoxin	Carbamazepine
Lindane	Lithium
Opiates	Phenobarbital
Phencyclidine (PCP)	Salicylate
Phenothiazines	Theophylline

TABLE I–41. SOME DRUGS REMOVED BY REPEAT-DOSE ACTIVATED CHARCOAL

Carbamazepine	Phenobarbital
Chlordecone	Phenylbutazone
Dapsone	Phenytoin
Digitoxin	Salicylate
Nadolol	Theophylline

TABLE I–43. HUMAN TERATOGENS[a]

Alcohol (ethanol)
Alkylating agents (busulfan, chlorambucil, cyclophosphamide, mustine/mechlorethamine)
Antimetabolic agents (aminopterine, azauridine, cytarabine, fluorouracil, 6-mercaptopurine, methotrexate)
Carbon monoxide
Coumadins
Diethylstibestrol (DES)
Disulfiram
Heparin
Lithium carbonate
Mercuric sulfide
Methyl mercury
Phenytoin
Polychlorinated biphenyls (PCBs)
Tetracycline
Thalidomide
Tretinoin (retinoic acid)
Trimethadione
Valproic acid

[a]Reference: Bologa-Campeanu M et al: Prenatal adverse effects of various drugs and chemicals: A review of substances of frequent concern to mothers in the community. *Med Toxicol Adverse Drug Exp* 1988;3:307.

Reference

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